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# DRYOPIDAE: 2. Taxonomic review of the Chinese species of the genus *Helichus* ERICHSON (Coleoptera)

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**Abstract**

Four Chinese species of the genus *Helichus* are treated. *Helichus lareynioides* CHAMPION is redescribed. *Helichus ussuriensis* LAFER and *Helichus lareynioides* are recorded for the first time from China. *H. hasegawai* SATÔ, is proposed as a junior synonym of *H. ussuriensis*. Two new species, *H. haraldi* sp.n. and *H. crenulatus* sp.n., are described from Yünnan. Several taxonomically significant structures are illustrated and a key to the Chinese species is included.

**Key words:** Coleoptera, Dryopidae, *Helichus*, new species, new synonym, China

## Introduction

The genus *Helichus* was erected by ERICHSON (1847) for the Nearctic *Elmis lithophila* GERMAR. Since then, no revision or detailed diagnosis of the world dryopid genera has been published. Numerous species from almost all continents were described as *Helichus* or transferred to this genus, e.g. by HINTON (1936a, 1936b) and DELEVE (1973, 1974). Several subgenera of *Helichus* were established by BOLLOW (1940).

NELSON (1989, 1990) split the genus *Helichus* into six genera: *Helichus*, *Postelichus* NELSON, *Pomatinus* STURM, *Pachyparnus* FAIRMAIRE, *Parahelichus* BOLLOW, and *Praehelichus* BOLLOW, and he provided a check list of (most of) the Old World species formerly placed in the genus *Helichus*, including the new generic assignments. Unfortunately, a thorough taxonomic revision was not published by NELSON (1990) who regarded *Helichus* s.str. as being confined to the Western Hemisphere.

However, examination of the types of all southeast Asian species formerly assigned to *Helichus*, and examination of undescribed species from China, provides evidence that *Helichus* s.str. (sensu NELSON 1990) does occur in the Old World as well.

## Material and Methods

The Chinese material used for this study was collected in the years 1992 - 1994. The CWBS localities in which *Helichus* was collected are listed below.

CWBS loc. 58. **Yünnan Province**; Lijiang Autonomous Prefecture; Lijiang County; 10 km SW Lijiang City; small, very cold stream, volcanic rock and boulders of limestone - sandstone agglomerations; 2500 m a.s.l.; 5.VII.1994; leg. Schillhammer & Ji

CWBS loc. 60. **Yünnan Province**; Lijiang Autonomous Prefecture; Lijiang County; 15 km N Lijiang City; small valley near the abandoned airport; small stream, 0.5 - 1.0 m wide, limestone, 2800 m a.s.l.; 6.VII.1994; leg. Schillhammer & Ji

CWBS loc. 107. **Liaoning Province**; Fushun City Region; Xinbin County; 80 km NE Fushun City; 6 km SW Liujiazi Village; small, cold stream flowing to loc. 104, ca. 0.5 - 1 m wide, gravel, shaded, some stones with moss, decaying plant material, river margin covered by rich vegetaion of *Larix* sp., *Pinus* sp., *Crataegus* sp., *Juglans* sp., ca. 130 m a.s.l.; 11.IX.1994; leg. Ji & Wang

For examination of genitalia, dried specimens were softened for several hours in warm water to which a small amount of acetic acid was added. Both male and female genitalia were macerated in cold lactic acid for several days, rinsed in water, and then examined in glycerine. All measurements were taken with a measuring ocular on a Wild M3Z stereomicroscope.

**Acronyms:**

| | |
|---|---|
| BMNH | The Natural History Museum, London [formerly: British Museum (Natural History)] |
| CASS | Chinese Academy of Sciences, Institute of Applied Ecology, Shenyang |
| CBB | Boukal collection, České Budějovice |
| CKB | Kodada collection, Bratislava |
| CWBS | China Water Beetle Survey |
| IBV | Institute of Biology and Pedology, Russian Academy of Sciences, Vladivostok |
| NMW | Naturhistorisches Museum, Wien |
| ZIL | Zoological Institute, Academy of Sciences, St. Petersburg (= Leningrad) |

| | |
|---|---|
| HW | Width of head with eyes |
| LPE | Medial length of pronotum + elytra |
| L | Medial length |
| MW | Maximum width |
| OI | Ocular index, ratio of HW and minimum distance between eyes |

## *Helichus lareynioides* CHAMPION
(Figs. 1, 5 - 7)

*Helichus lareynioides* CHAMPION 1924: 235.

**Type material**: Holotype ♂ (BMNH): "Ranikhet Div.[ision] Kumaon, U. P. June 20, H. G. C. [printed] \ Helichus sp. n. [handwritten] \ Helichus lareynioides Type Ch. [handwritten] \ Type H T. [printed] \ Helichus lareynioides CHAMP. [printed] \ G . C. CHAMPION, Brit. Mus. 1925-42 [printed] \ E. M. M. 1924. det. G. C. C. [printed]". The apex of the right elytron of the holotype is missing and the left elytron is partly broken near the apex.

**Material examined**: Holotype ♂ (BMNH); 3 ♂♂, 1 ♀ (CKB, NMW): "CH, Yunnan, 14. - 21. 6. 93 [= 1993], 100 km W of Baoshan, Gaoligongshan nat. res. E. Jendek, O.Sausa leg."; 1 ♂ (CKB): "Yunnan 1800 - 2000 [= m a.s.l.], 25°04N 101°55E, 17.-20/6/1994 \ YIPINGLANG [underside of label]".

**Redescription of holotype:** Body form moderately elongate, about 2 times as long as wide (LPE/MW), widest in posterior 1/3 of elytra; pronotum moderately convex dorsally, elytra almost flat in anterior 2/3 (both in lateral view). LPE = 3.95 mm, MW = 1.90 mm.

Surface with grey plastron and flat setigerous granules except on the following body parts: labrum, cranium dorsally, pronotal disc, prosternum along midline, prosternal process, metasternum on disc and between mesocoxae, abdominal intercoxal process, small areas of ventrites 2 - 4 postero-medially, ventrite 5, legs and antennae. Ventral granules moderately larger and more densely arranged than dorsal granules. Areas without plastron dark brown, but almost black on vertex and pronotum, reddish on venter; labrum, palpi, clypeus, antennae and legs also reddish.

Head: Labrum short, transverse, with short, densely arranged, yellowish, hair-like sensilla; antero-lateral angles rounded. Clypeus with long, yellowish, prone, hair-like sensilla with apices directed mediad covering area between anterior margin and antennae; anterior margin of clypeus straight; lateral angles arcuate. Width between antennal acetabula 0.45 mm. Antennae 11-segmented, pectinate; scapus moderately dilated apically; pedicel strongly dilated dorsad, nearly trapezoidal in dorsal view, with acute postero-external angle; antennomere 3 short, almost conical; antennomeres

4 - 11 short, gradually narrowed. Frons and vertex with setigerous punctures; puncture diameter slightly smaller than facets of eyes and separated usually by a distance distinctly smaller than a puncture diameter (but not joined); surface between punctures glabrous. Vertex almost flat; eyes with several very short, interfacetal sensilla; HW = 0.80 mm, OI = 1.33. Terminal segment of maxillary palpus slightly longer than preceding segments combined, apically narrowed; bearing round, small sensory pits (apically); oval, relatively large, subapical sensillar pits and oval, medial sensory pits on outer surface.

Thorax: Pronotum 1.00 mm long (L); widest in front of subbasal emargination (MW = 1.70 mm); apical width 1.00 mm; lateral margins moderately arcuate, converging anteriad; anterior angles deflected, produced. Area without plastron rounded, broadly extending to anterior margin, densely punctate. Punctures setigerous; their diameter subequal to a facet diameter; punctures narrowly spaced, almost joined; surface between punctures glabrous. Plastron areas covering posterior 1/3 and lateral 1/5; granules round, slightly smaller than facets, more widely spaced in posterior half. Prosternum in front of procoxae 0.45 mm long, anterior half deflexed, with a round tuft of long yellowish, hair-like, densely arranged sensilla on each side of midline. Area without plastron finely punctate; punctures sometimes confluent or joined with shallow, short grooves. Prosternal process 0.50 mm long, widest at its basal 1/3 (MW = 0.50 mm); lateral margin raised, finely grooved subapically; apex truncate. Punctures on prosternal process coarser and denser than those on prosternum, usually connected by moderately deeply impressed grooves on and near lateral margin. Metasternum slightly shorter than prosternum; longitudinal suture distinct; transverse suture hardly visible, junction of transverse and longitudinal suture depressed; disc moderately convex, with a pair of admedian sensillar tufts, and with a pair of longitudinal depressions mesally of these tufts; surface punctate; puncture density and puncture diameter as on margin of prosternal process. Scutellum small, subtriangular. Elytra about 2.90 mm long; maximum combined width 1.90 mm; anterior margin arcuate and finely crenulate; lateral margins distinctly margined, slightly diverging in basal 1/5, subparallel between basal 1/5 and apical 1/3, then gradually converging to apices; anterolateral angles acute, produced anteriad, glabrous. Each elytron with 7 longitudinal rows of punctures, not reaching apex; punctures largest in rows 1 - 4 (slightly coarser than facets), separated by a distance of about 1.5 - 2.5 times puncture diameter; rows 5 - 7 with smaller and less deeply impressed punctures. Interstices nearly flat, widest in basal half. Granules similar to those on pronotum, but larger and more densely arranged laterally. Epipleuron broadest basally, gradually narrowed to basal 1/4, then more or less equally wide.

Legs: All femora densely punctate, with short recumbent setae. Protibia about as long as lateral margins of pronotum; nearly straight; narrowest basally, then gradually widening apically; apex flattened dorso-ventrally; ventral side with small, preapical, acute tooth; inner side with rows of densely arranged, long, yellowish, hair-like setae (cleaning fringe sensu SPANGLER & PERKINS 1989); outer and ventral side with rows of stout, short, widely spaced setae. Protarsi about 0.7 times as long as protibia, segment 1 - 4 subequal in length, segment 5 about as long as preceding 4 segments combined; claws about as long as segment 4 (lateral view), moderately curved and narrow. Mesotibia slightly curved, cleaning fringe present along almost entire length; meso- and metatarsi about as long as protarsi, but claws about 1.5 times as long as segment 4. Metatibia similar to mesotibia, but slightly longer.

Abdomen: Intercoxal process triangular, micropunctate, its margin raised. Ventrite 5 as long as ventrite 2 - 4 combined; broadest at basal 1/3, then gradually and arcuately converging to emarginate apex; punctation dense, usually confluent; punctures becoming sparser and smaller anteriorly, denser and smaller laterally; preapically with two patches of long, yellowish, hair-like sensilla. Aedeagus (Figs. 5 - 7) with phallobasis tubular, slightly curved ventrad, about 1.2 times as long as parameres (lateral view); parameres widest basally, gradually converging to about middle, then curved ventrad and distinctly narrowed to rounded apex (lateral view), glabrous along inner

side; penis slightly surpassing middle of parameres, narrow, slightly curved ventrad in apical 1/4 (lateral view), baso-lateral penile apophyses broad (ventral view); fibula short and broad.

**Female genitalia:** ovipositor typical of Dryopidae; vagina and bursa copulatrix without sclerotized plates or spines.

**Sexual dimorphism:** The single female examined differs from the males in the following characters: 1) anterior margin of labrum emarginate; 2) clypeus without densely arranged, mesally directed, long, hair-like sensilla; 3) pro- and metasternum lacking sensillar tufts; 4) entire metasternum and abdomen except ventrite 5 covered with plastron; 5) apex of ventrite 5 almost round, with very small emargination; 6) preapical, long, hair-like, sensilla of ventrite 5 shorter; 7) elytra dorsally more convex in cross section; 8) protibia without subapical tooth.

**Variation:** Males vary in body length from 3.80 mm to 4.30 mm and in maximum width from 1.80 mm to 2.10 mm.

**Distribution:** Known from Uttar Pradesh and Yünnan (Fig. 16).

### *Helichus haraldi* sp.n.
(Figs. 2, 8, 9)

**Type material:** Holotype ♂ (NMW): "CHINA - Yunnan 1992 Lijiang, 23.6.-21.7. 26°53'N 100°18'E leg.E.Jendek". Paratypes: 1 ♂, 1 ♀ (NMW, CASS): "CHINA: NW - Yunnan 10 km SW Lijiang 2500m, 5. 7. 1994 leg. Schillhammer (13)" [= CWBS loc. 58]; 1 ♀ (NMW): "CHINA: NW - Yunnan 15 km N Lijiang 2800m, 6. 7. 1994 leg. Schillhammer (16)" [= CWBS loc. 60].

**Description of holotype:** Body form moderately elongate, about 2.1 times as long as wide (LPE/L), widest in posterior 1/3 of elytra; pronotum and elytra moderately convex dorsally (lateral view). LPE = 4.25 mm, MW = 2.00 mm.

Head: Width between antennal acetabula 0.50 mm; HW = 1.00 mm; OI = 1.53. Dorsal surface of cranium with micro- and macropunctures; macropuncture diameter equal to or slightly shorter than a facet diameter, separated by a distance smaller than their diameter, usually denser near eyes, interstices micropunctate.

Thorax: Pronotum 1.25 mm long (L) and 1.6 mm wide (MW), widest near base; apical width = 1.15 mm. Area lacking plastron with punctation similar to that of cranium, but micropunctures usually coarser. Prosternum in front of procoxae 0.50 mm long, finely and densely punctate on area lacking plastron; punctures usually confluent in anterior half. Prosternal process 0.55 long, widest at basal 1/3 (MW = 0.52 mm). Metasternum densely punctate on area without plastron, punctures connected by grooves. Elytra about 3.20 mm long, maximum combined width 2.00 mm.

Abdominal ventrite 5 with micro- and macropunctation. Aedeagus (Figs. 8, 9) with long, almost straight tubular phallobasis widened basally; phallobasis about 2.3 times as long as parameres (lateral view); parameres short, moderately curved ventrad in apical 1/3, gradually narrowed apically, apex rounded; penis surpassing apical 1/5 of parameres, almost straight in lateral view, with apical 1/5 continuously narrowed (ventral view); fibula narrow, about 0.5 times as long as penis (ventral view).

**Female genitalia**: Bursa copulatrix and vagina without sclerotized plates or spines.

**Sexual dimorphism:** Females differ from males in the following features: 1) larger size; 2) front margin of labrum emarginate; 3) clypeus without mesally directed, long, hair-like sensilla; 4) pro- and metasternum lacking sensillar tufts; 5) entire metasternum and abdomen except ventrite 5 covered by plastron; 6) apex of ventrite 5 almost round, with very small medioapical emargination; 7) preapical sensilla of ventrite 5 shorter; 8) dorsal cross section of elytra more convex; 9) protibia without subapical tooth.

**Variation:** Both sexes vary moderately in the body size and in the density of the cranial and pronotal punctation.

**Distribution** (Fig. 16): Known only from Yünnan.

**Etymology:** This species is dedicated to our friend Harald Schillhammer, who collected numerous new species of dryopids during the CWBS.

### *Helichus ussuriensis* LAFER
(Figs. 3, 10 - 12)

*Helichus ussuriensis* LAFER 1980: 47. - LAFER 1989.
*Helichus hasegawai* SATÔ: 1985: 53 **(syn.n.)**

**Type material:** Holotype ♂ (ZIL): "Ussurijskij zapovednik, r. Kamenka, 3.VIII 1972 (I. Levanidova). Paratypes (IBV, ZIL): 1 ex.: "Ussurijskij zapovednik, r. Kamenka, 7.VII 1972 (I. Levanidova); 1 ex.:"Ussurijskij zapovednik, r. Komarovka, 2.VIII 1972 (I. Levanidova); 1 ex.: "Chasanskij r-n, r. Kedrovaja, 16.VII 1972 (I. Levanidova); 1 ex. with same locality data, but: 30.IX. 1976 (G. Nikolaev); 3 exs.: "Spasskij r-n, s. Evseenka, v gorskom kljuce na chr. Sinij, 16.VII 1976 (E. Berlov)".

**Material examined:** 1 ♂, paratype of *Helichus ussuriensis* (ZIL); 4 ♂♂, 1 ♀ (CBB, CKB, NMW): "Rossija OR., Primorskij Kraj, Tigrovyj 19. - 21. 8. 1992, D. Boukal lgt."; 1 ♂ (NMW):"CHINA: Liaoning 80 km NE Fushun 11. 9. 1994, 130 m leg. Ji & Wang (43)" [= CWBS loc. 107]; 1 ♂, paratype of *H. hasegawai* (NMW): "Ikutawara HOKKAIDO Aug. 27, 1976 M. Sato leg."

**Synonymy:** Shape of aedeagus, body form, extension of plastron and punctation of the paratype of *H. hasegawai* are identical with specimens of *H. ussuriensis* from Russia and China. Therefore we consider *H. hasegawai* and *H. ussuriensis* as conspecific. It should be noted that *H. ussuriensis* may be a junior synonym of one of the North American species, e.g. *H. columbianus* BROWN, *H. confusus* HINTON or *H. foveatus* LECONTE. The taxonomic status of these species is still uncertain (see MUSGRAVE 1935; BROWN 1972; NELSON 1981, 1989).

**Diagnosis:** Very closely allied to the North American *H. columbianus* and *H. striatus* LECONTE. These species are characterized by the pronotal plastron which is situated only laterally and gradually widens apically, pronotum with a pair of admedian depressions behind middle, and elytral interstices 1 - 3 lacking plastron except for a short apical area. For detailed description see LAFER (1980).

Aedeagus (Figs. 10 - 12): phallobasis tubular, about 2.1 times as long as parameres; parameres short, moderately curved ventrad in apical half, apex rounded (lateral view); penis slightly shorter than parameres, moderately curved ventrad (lateral view); fibula about as long as penis, relatively narrow.

**Distribution:** Northeastern China (Liaoning, see Fig. 16), Russian Far East, Japan, ? North America.

### *Helichus crenulatus* sp.n.
(Figs. 4, 13 - 15)

**Type material:** Holotype ♂ (NMW): "CHINA - Yunnan 1992 Lijiang, 23.6.-21.7. 26°53'N 100°18'E leg.E.Jendek". Paratype ♀ (NMW): "CHINA: NW - Yunnan 15 km N Lijiang 2800m, 6. 7. 1994 leg. Schillhammer (16)" [= CWBS loc. 60].

**Description of holotype** (Fig. 4): Body form moderately elongate, robust, about 2.1 times as long as wide (LPE/MW); elytra gradually widening to apical 1/3, moderately convex dorsally; LPE = 5.65 mm, MW = 2.65 mm.

Plastron covering genae, lateral parts of pronotum, dorsal parts of elytra and venter except prosternal process, medial part of prosternum along midline, narrow area anterior to abdominal

intercoxal process, medial parts of metasternal intercoxal process, pro- and mesocoxa, inner surface of metacoxa, legs and ventrite 5. Colour black, labrum, maxillae, labium, antennal flagellum, pro-, mesotrochanter and tarsi reddish-brown.

Head: Labrum short; slightly emarginate anteriorly; rounded laterally; with short, yellowish, stout setae in lateral angles, and transverse row of longer hair-like sensilla near midlength. Clypeus moderately arcuate anteriorly; moderately convex dorsally; surface densely punctate from anterior margin to antennal insertion; punctation dual, setigerous. Width between antennal acetabula 0.80 mm, antennae 11-segmented, pectinate; segments 11 to 4 gradually dilated anteriad. Vertex with Y-shaped depression, central area between Y-arms convex; cranium posterior to antennal insertion granulate; granules about as coarse as facets, flat, rounded, setigerous and separated by a distance subequal to their diameter, becoming denser near eyes. Terminal segment of maxillary palp slightly longer than preceding 3 combined, widest at apical 1/3, with terminal and subapical sensory pits. HW = 1.25 mm, OI = 1.56.

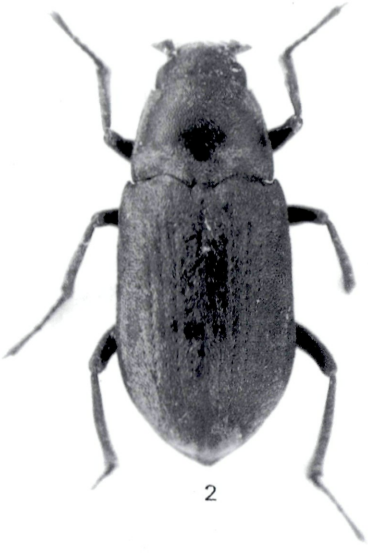
Thorax: Pronotum 1.45 mm long (L) and 1.95 mm wide (MW); widest at basal 1/3, anterior width 1.35 mm; anterior angles acute, produced; lateral margins convergent, arcuate in posterior 1/3, crenulate in anterior 2/3; posterior margin trisinuous; granulation as on vertex; plastron restricted to areas along lateral margins, widest on posterior 1/3 (mesally almost reaching scutellum); pronotal disc with a pair of admedian, slightly oblique protuberances posterior to middle and a second pair of oblique, slightly elongate, lateral protuberances situated near middle. Prosternum in front of procoxae slightly longer than prosternal process, without plastron on narrow area along midline. Prosternal process widest basally; lateral margins elevated, gradually convergent in basal half, then concave to apex; apex narrow, truncate. Metasternal disc moderately convex; longitudinal suture complete, elevated to form a lamina posterior to connection with transverse suture. Metasternal intercoxal process deeply depressed medially, with raised margins, anterior margin deeply emarginate. Scutellum slightly shorter than wide, sides arcuate; anterior margin without plastron; granulate. Elytra 4.30 mm long; arcuate and finely crenulate basally; apically deflexed; humeri slightly prominent, round; lateral margin explanate; with 9 rows of punctures; punctures of rows 1 - 4 coarse and deeply impressed, less coarse and hardly visible in rows 5 - 9; sutural margin raised in anterior 2/3; intervals 3, 5 and 7 elevated from base almost to apex, interval 9 elevated from middle to apical 1/4 and concealing lateral margins in dorsal view; epipleura broadest basally, then gradually narrowed to middle, then subequal in width almost to apices.

Legs: All femora densely punctate; inner surface of mesofemur with rows of long, stout, hair-like sensilla near midlength, remaining sensilla shorter and recumbent. Protibia about as long as lateral margins of pronotum, almost straight, without preapical, ventral tooth and with cleaning fringe along inner side; tarsi about 0.7 times as long as tibia, terminal segment as long as preceding 4 combined; claws about as long as segment 4, moderately curved, microreticulate. Meso- and metatibia slightly longer and more curved than protibia, their claws also longer.

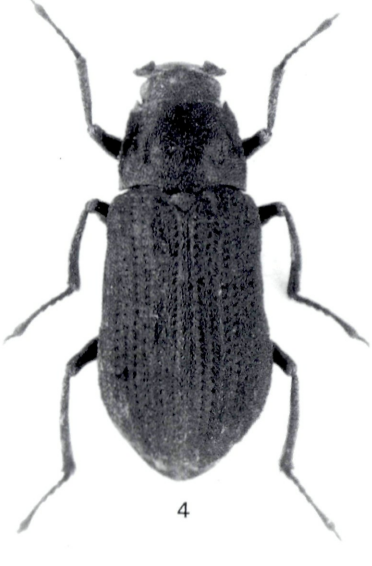
Abdomen: Abdominal intercoxal process depressed, with raised margin; apex of ventrite 5 with broad, deep, round emargination. Aedeagus (Figs. 13 - 15) with tubular, robust phallobasis curved ventrad in middle, about 2.7 times as long as parameres (lateral view). Parameres short; with ventral outline nearly straight from base to apical 1/4, then moderately curved ventrad; dorsal outline concave in middle portions, then convex in apical 1/3; apex round (lateral view); inner side with distinct gibbosity on apical 1/4 (ventral view) near dorsal margin. Penis short, broad, slightly surpassing apical 1/3 of parameres, moderately bent (lateral view); ventral sac with dorso-lateral sclerotization and with scale-like structures covering apical half (ventral view); fibula slightly shorter than penis, strongly sclerotized.

**Female genitalia:** Vagina and bursa copulatrix without spines and plates.

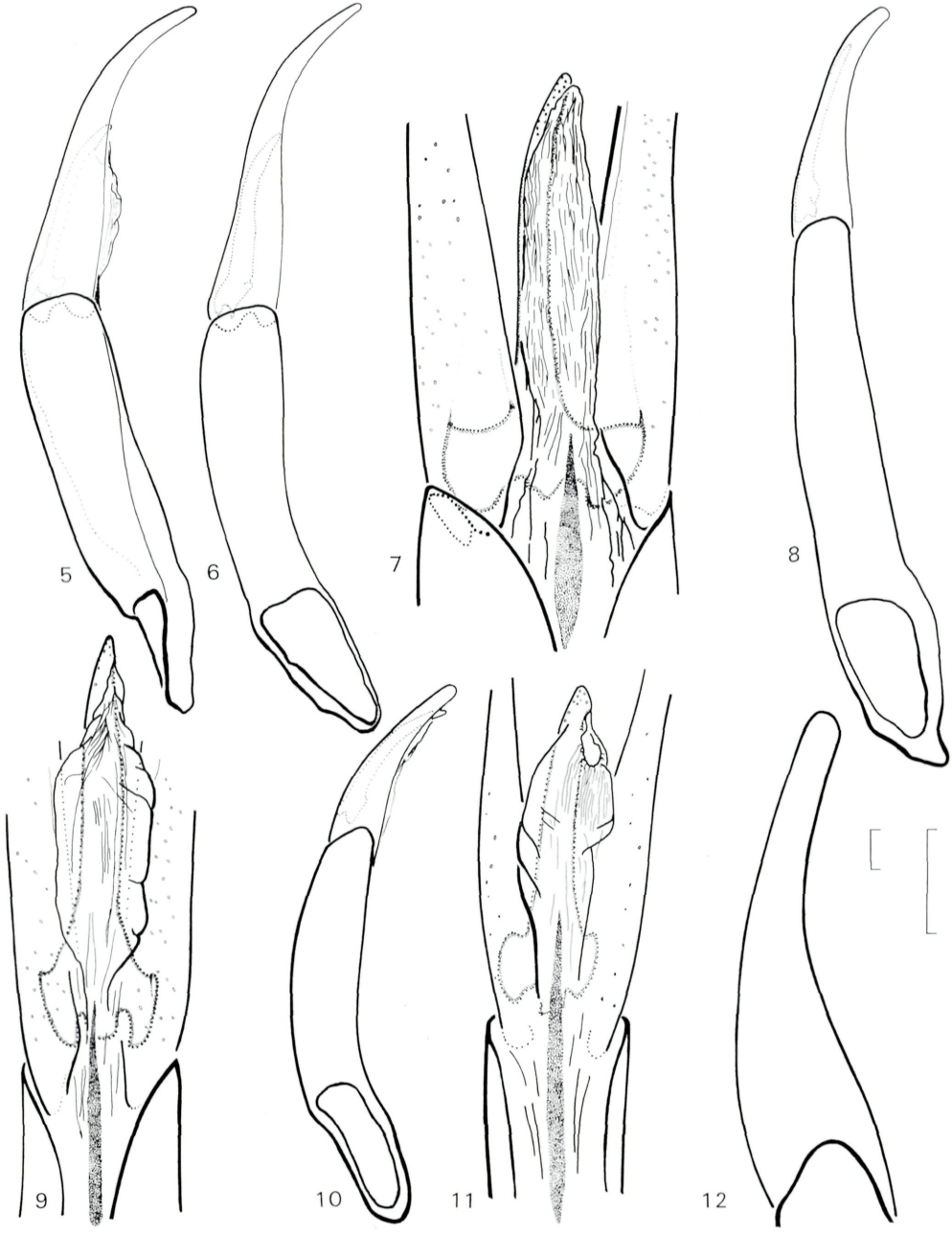
**Sexual dimorphism:** Female larger than male; apex of ventrite 5 finely arcuate, lacking median emargination.






Figs. 1 - 4: Habitus of 1) *Helichus lareynioides*, 2) *H. haraldi* sp.n., 3) *H. ussuriensis* and 4) *H. crenulatus* sp.n.




Figs. 5 - 7: *Helichus lareynioides*, aedeagus, 5) holotype, lateral view, 6) specimen from Yünnan, lateral view, 7) holotype, penis, ventral view.
Figs. 8, 9: *Helichus haraldi* sp.n., aedeagus of holotype, 8) lateral view, 9) penis, ventral view.
Figs. 10 - 12: *Helichus ussuriensis*, aedeagus, specimen from Primorskij Krai, 10) lateral view, 11) penis, ventral view, 12) outline of paramere, lateral view.
Scale = 0.1 mm; short scale - Figs. 5, 6, 8, 10; long scale - Figs. 7, 9, 11.

**Distribution** (Fig. 16): Known only from Yünnan.

**Etymology:** Named in reference to the crenulate lateral margins of the pronotum.

## Key to the Chinese species of the genus *Helichus*

1 Pronotal plastron covering lateral and posterior margins (Figs. 1, 2); all elytral interstices almost flat, humeri prominent and acute; inner surface of mesofemur without rows of long semi-erect hair-like sensilla near midlength; males with groups of hair-like sensilla on prosternum and metasternum, long prone hair-like sensilla on clypeus and on preapical portions of ventrite 5, and with small preapical ventral tooth on protibia ..... **2**

- Pronotal plastron restricted to lateral margins (Figs. 3, 4); elytral interstices 3, 5, 7, and 9 more or less elevated, humeri rounded; inner surface of mesofemur with rows of long semi-erect hair-like sensilla near midlength; males without groups of hair-like sensilla, protibia without ventral preapical tooth ..... **3**

2 Cranial and pronotal punctation simple, without micropunctures; phallobasis about 1.2 times as long as parameres (Figs. 5, 6); penis short, slightly surpassing middle of parameres; fibula broad (Fig. 7)..... ***lareynioides* CHAMPION**

- Cranial and pronotal punctation dual, with micro- and macropunctures; phallobasis long, about 2.3 times as long as parameres (Fig. 8); penis long, reaching apical 1/5 of parameres; fibula narrow (Fig. 9)..... ***haraldi* sp.n.**

3 Length (LPE) about 5.6 mm; pronotum with gibbosities and depressions, granulated on whole surface, crenulated along anterior 2/3 laterally; entire elytra covered with plastron; aedeagus robust (Fig. 13); parameres with dorsal outline concave in middle portions, inner side with a distinct gibbosity on apical 1/4 (Figs. 14, 15); penis short, broad, reaching apical 1/3 of parameres; ventral sac with scale-like structures covering apical half; fibula slightly shorter than penis; apex of male ventrite 5 with very deep, broad emargination ..... ***crenulatus* sp.n.**

- Length (LPE) about 4.75 - 4.85 mm; pronotum with shallow depression on each side of middle in posterior 1/3, gibbosities and lateral crenulation absent, granulation reduced centrally; elytral interstices 1 - 3 and scutellum without plastron; aedeagus less robust (Fig. 10); parameres with dorsal outline convex, inner side without gibbosity, (Fig. 11); penis long, narrow, reaching almost to apex of parameres; ventral sac without scale-like structures (Fig. 11); fibula about as long as penis; apex of male ventrite 5 with shallow, medial emargination..... ***ussuriensis* LAFER**

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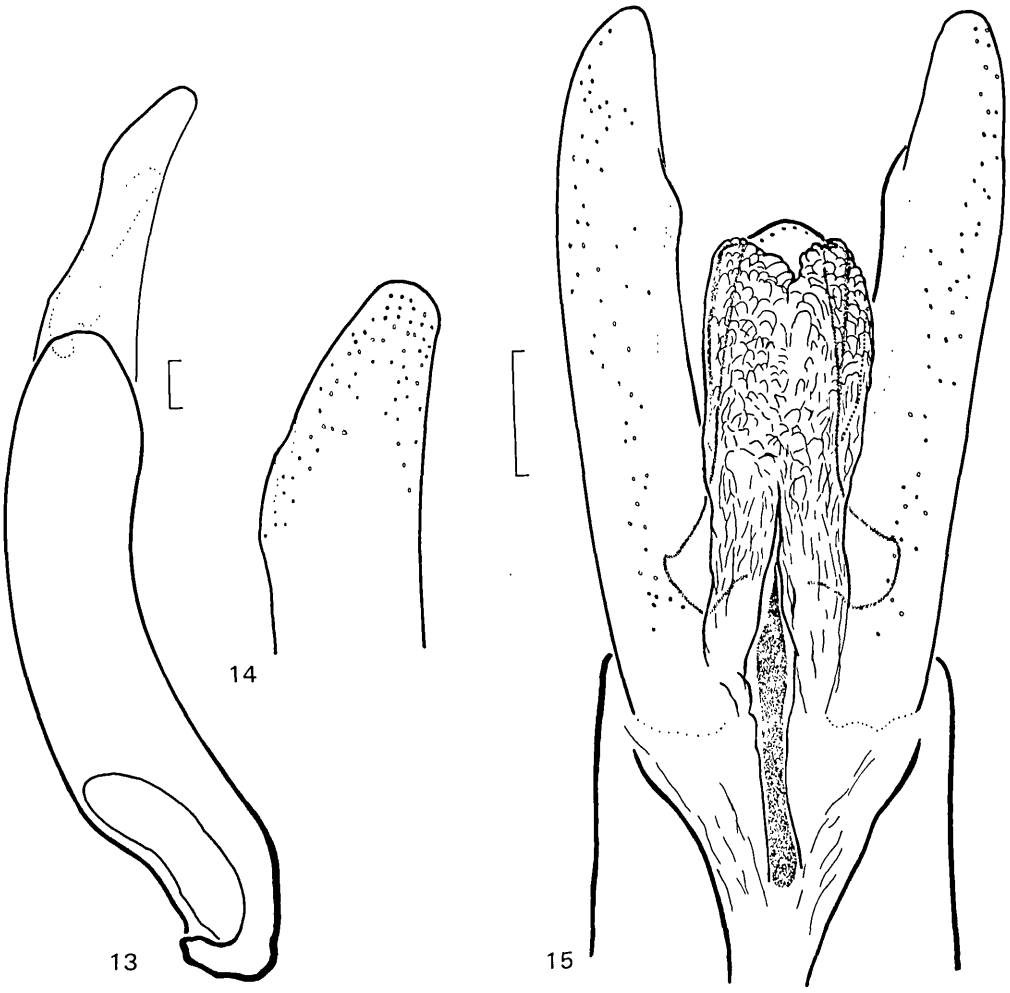


Figs. 13 - 15: *Helichus crenulatus* sp.n., aedeagus of holotype, 13) lateral view, 14) apex of paramere, lateral view, 15) penis and parameres, ventral view. Scale = 0.1 mm.

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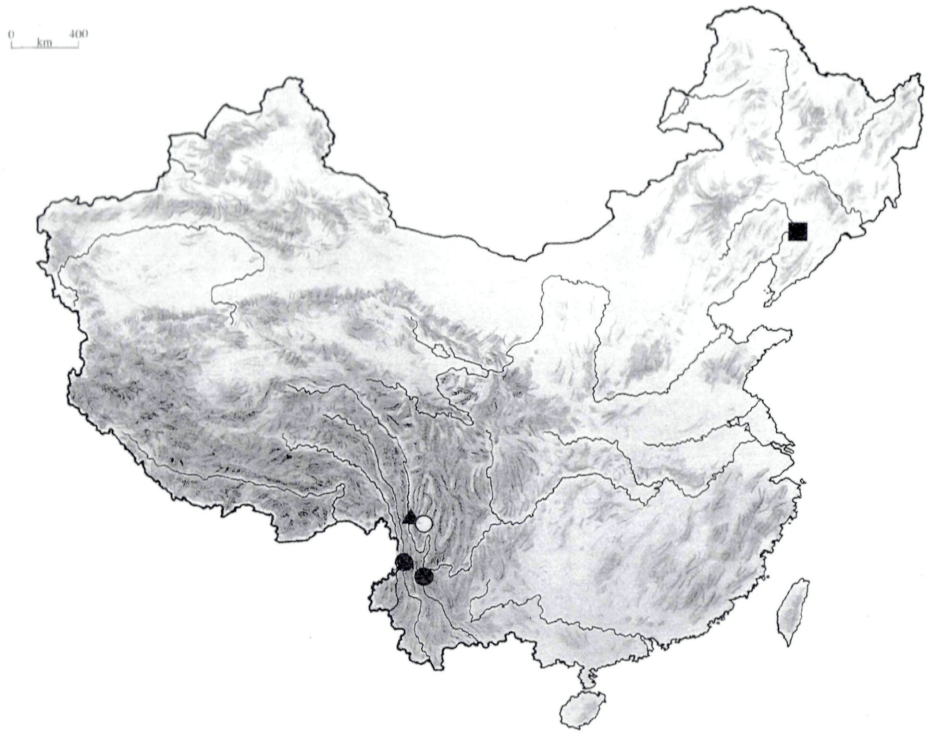


Fig. 16: Geographical distribution of the genus *Helichus* in China. *Helichus crenulatus* (white circle), *Helichus haraldi* (black triangle), *Helichus lareynioides* (black circle), *Helichus ussuriensis* (black square).

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